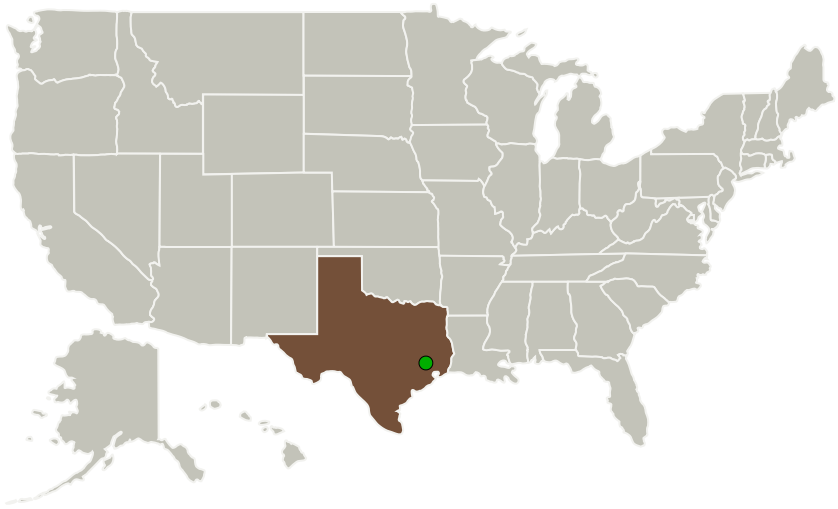
Advanced Modeling Tools for Controlling Complex Assets Across Time Delay, Phase II

Completed Technology Project (2011 - 2013)

Project Introduction

The proposed innovation is a hybrid simulation module to replace the current "Behavioral Sim" in JSC's Predictive Interactive Graphical Interface (PIGI). PIGI helps an operator compensate for lunar-scale time delay, and is part of NASA's "RAPID Workbench". The Behavioral Sim acts as an oracle, taking initial conditions and a sequence of commands and producing trajectories and expected final location of the robot. We propose to provide functionality to extend PIGI to manipulation activities. This includes modeling the robot's manipulation and perception capabilities and its environment. We will use NASA's R2 robot operating on ISS as our test case.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
TRACLabs, Inc.	Lead Organization	Industry	Webster, Texas
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations
Texas

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Project Transitions

June 2011: Project Start

December 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138675)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

TRACLabs, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

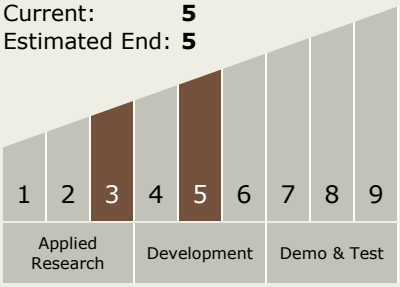
Carlos Torrez

Principal Investigator:

Robert R Burridge

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.4 Human-Robot Interaction
    - TX04.4.3 Remote Interaction

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System